

Mr. Edwin Ward, F.Z.S., exhibited a pair of Hippopotamus teeth, and made the following remarks:—

“The Hippopotamus teeth sent for exhibition this evening are thought to be probably the largest that have as yet been obtained. The dimensions and weight of these two lower canine teeth are as follows:—length of each tooth from end to end round outer curve 30 and 31 inches respectively; circumference of each 9 and $9\frac{1}{4}$ inches respectively. Total weight of the pair 15 lbs.

“These specimens were obtained at St. Lucia Bay, S. Africa, in 1873, by the Hon. Charles Ellis, to whose kindness I am indebted for being enabled to show them to the Meeting.”

The following papers were read:—

1. On the Genus *Chalinolobus*, with descriptions of new or little-known Species. By G. E. DOBSON, M.A., M.B., F.L.S., &c.

[Received April 23, 1875.]

The genus *Chalinolobus* was formed by Dr. Peters for the reception of *Vespertilio tuberculatus* from New Zealand, discovered by Forster about 1773, and described in his MSS., which were not published till 1844*. This species was redescribed by Mr. R. F. Tomes in 1857† as *Scotophilus tuberculatus*; but, although his description occupies three pages, it is doubtful whether it would be possible to recognize the species from it; for some of the most important characters, as the lobes of the lower lip and the large post-calcanear lobes, have not been noticed, and the dentition has been incorrectly described.

While examining some stuffed specimens and skins in the British-Museum collection from South Australia and Tasmania, which had been labelled “*Miniopterus australis*” and “*Scotophilus morio*, Gray,” corresponding to the same names in the ‘List of Mammalia in the British Museum, 1843,’ I observed that their dentition corresponded in all respects with this species from New Zealand; and repeated examinations and careful measurements have shown that they differ in no respect from it.

This is especially interesting; for *Chalinolobus tuberculatus* has hitherto been reported from New Zealand only, and was believed to be peculiar to that island. The occurrence of this species in Tasmania and South Australia, however, is not very surprising; for New Zealand is not more distant from Tasmania than the Azores from the coast of Portugal, and *Vesperugo leisleri* of Europe is certainly also found in the Azores.

The discovery of *Chalinolobus tuberculatus* in these dried specimens led me to suspect that other species from Australia and Tasmania described from skins might belong to the same group also;

* ‘Descriptiones animalium in itinere ad maris australis terras per annos 1772–74,’ &c., p. 62 (1844), ed. Lichtenstein.

† P. Z. S. 1857, pp. 135–138.

and the same peculiarities of dentition occurring in *Scotophilus gouldii*, Gray, and in *S. nigrogriseus*, Gould, the relationship of these species with *Chalinolobus* was determined. By softening the dried integuments and by taking careful measurements of the bones remaining in the skins, I was enabled to determine that certain unnamed specimens in the collection, preserved in alcohol, belonged to the same species respectively, and in them the characteristic lobes of the lower lip were found well developed.

Scotophilus poensis, Gray, from Fernando Po, was, in the same manner, found to belong to this group; also *S. variegatus*, Tomes, and a new species, which will be described, from the Cameroon Mountains.

The number of species of this genus is thus raised from one to six; and the genus may be defined as follows:—

Genus CHALINOLOBUS.

Chalinolobus, Peters, Monatsber. Akad. Wissensch. Berlin, 1866, p. 679, and 1867, p. 480 (note).

Muzzle broad, generally very short and obtuse; nostrils opening sublaterally, forming a prominent flattened central ridge on the upper surface of the muzzle, separated from the well-developed glandular prominences by a distinct groove on either side. Ears short and broad, rhomboidal or ovoid; the outer margin prolonged forwards towards the angle of the mouth; tragus expanded above and curved inwards. *Lower lip with a distinct fleshy lobule* placed near the angle of the mouth and projecting horizontally outwards. Wings to the base of the toes; tail generally nearly as long as the head and body.

Dentition.—Inc. $\frac{2-2}{6}$; C. $\frac{1-1}{1-1}$; Pm. $\frac{2-2}{2-2}$ or $\frac{1-1}{2-2}$; M. $\frac{3-3}{3-3}$.

Upper incisors unequal; the inner incisors on each side long and unicuspidate; outer incisors short, scarcely equalling in vertical extent the cingulum of the inner incisors: in species having two upper premolars the first is very small, placed in the inner angle between the canine and closely approximated second premolar, and visible only with the aid of a lens.

This genus closely resembles *Vesperugo* in general characters, but is readily distinguished by the lobe projecting from the lower lip on either side near the angle of the mouth, by the unicuspidate upper inner incisors, by the remarkable obtuseness of the muzzle and shortness of the head, by the prominent nostrils separated by distinct grooves from the well-defined glandular elevations, and in most species by the peculiarly thin membranes traversed by remarkably distinct reticulations and parallel lines.

The form of the ear-conch and tragus, the short broad muzzle, the long tail generally wholly contained within the wing-membrane, and the shortness of the first phalax of the longest finger, in some species, connect it with *Miniopterus*.

Distribution.—Continents of the Old World south of the equator—

Australia, Tasmania, New Zealand, and Equatorial and Southern Africa.

This genus may be considered intermediate between *Vesperugo* and *Miniopterus*, though it is evidently more closely allied to the former, and may be similarly divided into subgenera. These subgenera, however, similarly artificially based upon the presence or absence of the minute first upper premolar, separate the species into two very natural groups distinguished by other more important characters and inhabiting respectively a great continent.

Synopsis of Subgenera and Species.

- I. Premolars $\frac{2-2}{2-2}$, first upper premolar minute; fur generally dark, black or dark brown; head and shoulders darker than the posterior parts of the body; integuments dark... *Chalinolobus*.
Hab. Australia, Tasmania, and New Zealand.
- a. Internal basal lobe of the ear not forming a distinct lobule at the base projecting backwards..... *C. tuberculatus*.
 b. Internal basal lobe forming a distinct lobule at the base projecting backwards.
 a'. Outer margin of the ear terminating in front in a pendent lobule; forearm 1"·8 in adults..... *C. gouldii*.
 b'. Outer margin of the ear terminating in a horizontal lobule; forearm 1"·35 in adults *C. nigrogriseus*.
- II. Premolars $\frac{1-1}{2-2}$, the single upper premolar large, close to the canine; fur generally light grey or cream-colour at the extremities; head and shoulders lighter than the posterior parts of the body; integuments white or light brown ... *Glauconycteris*.
Hab. Southern and Equatorial Africa.
- c. Internal basal lobe of the ear commencing in a long narrow lobule projecting backwards.
 c'. A distinct postcalcaral lobule *G. poensis*.
 d'. No postcalcaral lobule; lower incisors not crowded... *G. argentatus*.
 d. Internal basal lobe of the ear commencing in a short blunt lobule.
 e'. No postcalcaral lobule; lower incisors crowded *G. variegatus*.

In the species included under the first section (subgenus *Chalinolobus*) the tragus reaches its greatest width above the middle of the inner margin, as in *Vesperugo noctula*; and there is either no lobule near the base of the outer margin, or its position is occupied by a slight convexity. In the species included under the second section (subgenus *Glauconycteris*) there is a distinct, acutely pointed, triangular lobule near the base of the outer margin of the tragus, which reaches its greatest width about the middle of the inner margin.

CHALINOLOBUS GOULDI.

Scotophilus gouldii, Gray, Appendix to Grey's Journ. of two Expeditions of Discovery in Australia, p. 405.

Head short, crown of the head very slightly raised above the face-line: muzzle broad, obtuse; glandular prominences on the sides much developed, adding to the breadth of the muzzle in front; nostrils prominent above, separated on each side by a small sulcus from the

glandular prominences. Ears similar in general outline to those of *Miniopterus schreibersii*; inner margin of the ear very convex forwards in lower half, then sloping almost horizontally backwards to the tip, the position of which is determined only by a slight flattening of the upper third of the outer margin; the lower two thirds of the outer margin is slightly convex, and terminates in a conspicuous lappet of skin hanging vertically downwards, placed at a short distance behind the angle of the mouth. Tragus broad above, reaching its greatest breadth above the middle of the inner margin; the outer margin has a slight convexity near the base, above it a concavity from which the tragus expands considerably outwards, so that the superior part of the outer margin nearly equals the whole inner margin in length: the inner margin is straight or slightly concave. Lower lip with a distinct fleshy lobe, as in *C. tuberculatus*.

Feet small; wings to the base of the toes; postcalcaneal lobe rounded, well developed, at a distance equal to the breadth of the foot from the end of the tibia; extreme tip of the tail projecting.

On the upper surface the fur extends upon the wing-membrane as far as a line drawn from the middle of the humerus to the knee, and the base of the interfemoral is occupied by a triangular patch of moderately long hairs. Beneath, the hair extends more densely somewhat beyond a line drawn from the elbow to the knee-joint, a few hairs passing outwards behind the elbow and posterior to the forearm and carpus, ranged along part of the oblique parallel lines traversing the wing-membrane from the forearm backwards, as in *Vesperugo noctula*. This band of hairs posterior to the forearm is found in almost every species of this genus.

On the upper surface the fur covering the head, neck, and shoulders is black, with a very faint reddish tinge; posterior to the point of origin of the antebrachial membrane the fur is dark at the base, the terminal half of the hairs yellowish brown, at the base of the tail and upon the interfemoral membrane yellowish brown throughout. Beneath, on the breast, the bases of the hairs dark, the terminal half reddish or ashy, on the abdomen the extremities of the hairs yellowish white, while on the sides of the body and on the wing- and interfemoral membranes the fur is pale yellowish white throughout.

Inner incisors unicuspidate and long: outer incisors very short, close to the outer and anterior sides of the bases of the inner incisors. Lower incisors trifid, crowded. First upper premolar exceedingly small, so minute as to be seen only with the aid of a lens, wedged in between the inner parts of the contiguous edges of the bases of the canine and second premolar, as in *V. noctula*; the second premolar is closely approximated externally to the canine, and the minute first premolar cannot be seen from without. The first lower premolar equals half the second in vertical extent.

Length (of an adult ♀ preserved in alcohol): head and body 2''·4; tail 2''·2; head 0''·75; ear 0''·6 × 0''·45, tragus 0''·28 ×

0''·15; forearm 1''·8; thumb 0''·3; second finger 3''·3; fourth finger 2''·15; tibia 0''·75; foot and claws 0''·35*.

Hab. New South Wales; Tasmania.

CHALINOLOBUS NIGROGRISEUS.

Scotophilus nigrogriseus, Gould, Mamm. of Australia, vol. iii. pl. 44.

Head short, slightly elevated above the face-line; muzzle broad, shortly conical; nostrils prominent on the upper surface of the muzzle, projecting slightly by their inner margins in front, opening sublaterally, emarginate between, and closer together than in other species of this genus. Ears very rhomboidal in outline; the outer and upper angle, forming the tip, rounded off; the lower half of the outer margin slightly reflected backwards at the edge; emarginate opposite the base of the tragus, and terminating in a distinct rounded lobe close to the angle of the mouth, not hanging vertically downwards at its termination as in *C. gouldi*; tragus expanded outwards above, reaching its greatest width above the middle of the inner margin, the breadth of the summit equal to the length of the inner margin, which is straight or slightly concave. On the whole, the form of the tragus is very similar to that of *C. gouldi*.

Wings to the base of the toes; postcalcanear lobe rounded, well developed, about the breadth of the foot from the tibia; last rudimentary joint of tail free.

Above deep black, the tips with a slight brownish or greyish tinge; beneath similar, the tips ashy and generally of a lighter shade on the pubes and along the sides of the body.

Distribution of the fur and dentition quite similar to those in *C. gouldii*.

Length (of an adult ♂ preserved in alcohol): head and body 1''·75; tail 1''·35; head 0''·55; ear 0''·5, tragus 0''·2 × 0''·12; forearm 1''·35; thumb 0''·28; second finger 2''·6; fourth finger 1''·7; tibia 0''·55; foot and claws 0''·28.

Hab. Australia, northern and eastern coasts, Port Essington, Moreton Bay.

CHALINOLOBUS ARGENTATUS, n. sp.

The crown of the head is abruptly elevated above the face-line as in *Miniopterus*, but to a much less extent; muzzle short, very obtuse in front, broad and flattened above; nasal apertures wide apart in front, separated by a slightly concave space, opening sublaterally, bounded laterally by the front margins of the labial glandular prominences which are separated from the nostrils above by a sulcus on each side, as in the other species of this genus. Beneath, on each side of the chin, below the under lip, a smooth broad rounded elevation exists separated from its fellow of the opposite side by the

* The original description of this species scarcely occupies two lines, and applies equally well to at least twenty different species; and the fact that all subsequent descriptions have been based on this and on the imagination of the describer, and were not derived from an examination of the types, will explain my reasons for giving so lengthened a description.

small naked space on the lip in front of the lower incisors. These elevated sides of the chin are covered with short hairs and enclose a hollow space between. Ears very like those in *Miniopterus*, short and rather sloped backwards; the inner margin commences in a long lobule directed backwards; the margin of the ear is almost regularly convex all round from the commencement of the inner margin to a point in the outer margin opposite the base of the tragus, where it becomes slightly emarginated, and immediately beyond abruptly convex, forming a short erect lobe connected by a low band with a wart in front at the angle of the mouth, which is continuous with a horizontal lappet of thickened skin extending forwards along the lower lip almost as far as a point opposite the lower canine. With this lappet of the lower lip the outer margin of the ear is thus directly continuous. Tragus semilunate, the inner margin slightly concave, the outer regularly convex, at the base a rather large equilateral triangular lobule very acutely pointed.

First phalanx of longest finger short, intermediate in length between that of *Miniopterus* and that of *Vesperugo*, terminal phalanx very long, flexed forwards on the under surface of the first phalanx in repose; in this position it extends nearly to the middle of the metacarpal bone. Feet small; wings to the base of the toes; calcaneum long and straight, extending quite three fourths the distance between the ankle and the tip of the tail; no postcalcaneal lobule.

Tail as long as the head and body, wholly contained within the interfemoral membrane.

The ears and the face are nearly naked, a few short hairs only appearing on the glandular prominences between the eyes and nostrils; the fur of the body above and beneath extends upon the wing-membranes as far as a line drawn from the middle of the humerus to the middle of the femur; the interfemoral membrane above and beneath is quite naked, except where a small triangular patch of hair appears at the root of the tail.

The fur is tricoloured, the basal third of the hairs black, the middle third white, and the terminal third a beautiful dark silvery grey. This is the arrangement of the colours about the middle of the body; but the grey is more prevalent towards and on the head, while the dark shades prevail slightly over the grey towards the tail.

The integument of the ears and face pearly white; wing- and interfemoral membranes dusky white, translucent, traversed by well-defined reticulations and parallel lines.

The teeth are very peculiar. The inner upper incisors very long, remarkably slender and acute; the outer incisor on each side fills up the space between the inner incisor and the canine by its broad base; but its unicuspidate vertically directed summit is very short, and scarcely exceeds the cingulum of the inner incisor. The canines are extremely long and slender, and are directed almost vertically downwards and slightly outwards; the lower canines are also very slender, but scarcely more than half the length of the upper ones. The upper premolar is very acute and close to the canine;

the posterior upper molar little more than half the size of the second molar. The lower incisors are distinctly trifid, some even appearing to have a fourth lobe; they are not crowded, and form a regular semi-circle across the wide space between the canines. The lower premolars are also, like the canines, very slender and acutely pointed, the first premolar about half the size of the second.

Length (of an adult ♀ preserved in alcohol): head and body 2''·0; tail 2''·0; head 0''·55; ear 0''·5, tragus 0''·22 × 0''·1; forearm 1''·7; thumb 0''·25; first finger 1''·7; second finger—metacarp. 1''·7, 1st ph. 3''·6, 2nd ph. 1''·3; third finger—metacarp. 1''·55, 1st ph. 0''·45, 2nd ph. 0''·5; fourth finger—metacarp. 1''·35, 1st ph. 0''·4, 2nd ph. 0''·3; tibia 0''·72; foot and claws 0''·3.

Hab. Cameroon Mountains, western equatorial Africa.

This species has a general resemblance to *Miniopteris schreibersi* in the shape of the head and ears, in the shortness of the first phalanx and great length of the terminal phalanx of the longest finger, in the long and slender tail wholly contained within the interfemoral membrane; added to which the grey colour of the fur and corresponding size would cause specimens of this species to be readily confounded, on a superficial examination, with specimens of the European grey-coloured *M. schreibersi*.

CHALINOLOBUS POENSIS.

Kerivoula poensis, Gray, Ann. Mag. Nat. Hist. vol. x. p. 258 (1842).

Ears very similar to those of *C. argentatus*; inner and outer margins convex, without a distinct tip, the outer margin forming a convex lobe in front of the base of the tragus, and terminating close to the angle of the mouth, the internal basal lobe forming a narrow lobule projecting backwards. Tragus similarly semilunate, even more curved inwards; the outer margin to the lip forming an arc nearly equal to two thirds of the circumference of a circle; the inner margin slightly concave; immediately above the base of the outer margin a prominent, acutely pointed, triangular lobule. So far as can be perceived from an examination of the dilapidated specimen which forms the type of this species, the lower lip has a horizontal lobe extending from the angle of the mouth to a point opposite the lower canine tooth, as in *C. argentatus*. Nostrils wide apart, separated by a slightly concave space nearly one tenth of an inch wide, and opening almost directly laterally.

Thumbs and feet as in *C. argentatus*, and similarly black at the extremities, with black claws. Postcalcanal lobe long and narrow, triangular, the apex of the triangle (which is placed about the middle of the lobe) supported by a small cartilaginous projection placed at right angles to the calcaneum. The tail appears to be wholly contained within the interfemoral membrane.

Fur above dark at the base of the hairs, the extremities grey on the head and neck, and grey with a yellowish tinge on the back and sides; beneath similarly dark at the base, with greyish yellow extremities.

The fur of the body extends upon the wing-membrane as far as a

line drawn from the middle of the humerus to the middle of the femur, and upon the interfemoral triangularly as far as the end of the third caudal vertebra. Beneath, the wing-membrane is covered as far as a line drawn from the elbow to the knee-joint, and a few thinly spread hairs are ranged in short parallel rows on the membrane posterior to the elbow and forearm.

Teeth similar to those of *C. argentatus*, but not so slender, and the upper incisors are more inclined inwards and have the small projection on their outward sides near their extremities.

Length (total) about 3 inches, of which the tail appears to measure half; ear 0''·4, tragus 0''·16 × 0''·08; forearm 1''·5; thumb 0''·23; second finger—metacarp. 1''·5, 1st ph. 0''·5, 2nd ph. 1''·0; third finger—metacarp. 1''·4, 1st ph. 0''·35, 2nd ph. 0''·45; fourth finger—metacarp. 1''·25, 1st ph. 0''·3, 2nd ph. 0''·3; tibia 0''·63; foot and claws 0''·28.

Hab. Fernando-Po Island, west coast of Africa.

This species resembles *C. argentatus*, but is at once distinguished by the presence of a postcalcaral lobe, and by its smaller size.

CHALINOLOBUS VARIEGATUS.

Scotophilus variegatus, Tomes, P. Z. S. 1861, p. 36*.

Closely allied to *C. argentatus*, which it resembles in general form, in size, and in the colour of the fur. It is, however, readily distinguished by the shortness of the lobule at the base of the inner side of the ear-conch, and by the lower incisors, which are crowded between the canines and placed at right angles to the direction of the jaw. The teeth are similar to those of *C. poensis*, not slender and extremely acute as in *C. argentatus*; and this condition is present in immature specimens also, so that the comparative bluntness of the teeth is not due to age. The head is also longer, the ears larger, and the face is covered with hair to within a short distance from the end of the nose. The lobes of the lower lip are smaller, and the under surface of the lower jaw not raised on the sides as in *C. argentatus*.

The calcaneum is quite similar to that of *C. argentatus*; and there is no postcalcaral lobe. I have examined the type specimen of this species, and find that the postcalcaral lobe described by Tomes has been produced by distortion in drying.

Length (of a ♂ preserved in alcohol) 1''·9; tail 1''·8; head 0''·65; ear 0''·6, tragus 0''·22; forearm 1''·55; thumb 0''·3; 2nd finger—metacarp. 1''·4, 1st ph. 0''·6, 2nd ph. 1''·0; 4th finger—metacarp. 1''·3, 1st ph. 0''·3, 2nd ph. 0''·3; tibia 0''·7; foot and claws 0''·3.

Hab. Otjoro, S.W. Africa.

* The type of this species from Mr. Tomes's collection (and also a duplicate in alcohol) is preserved in the Berlin Museum, which I have lately visited; and Prof. Peters has most kindly afforded me every opportunity for examining the invaluable collection of Chiroptera, which has been brought together from all parts of the world by his unwearied exertions.